STATEMENT

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INTRODUCTION

Good morning Chairman Burns and members of the Subcommittee on Science, Technology and Space. I appreciate the opportunity to testify here today and to tell you of some of the exciting things that are going on in commercial space transportation and some of the areas we feel need to be addressed. And, since this hearing is preparatory to authorization of the Fiscal Year 1996 budget, I will address what we see as the resource needs to enable us to carry out our responsibilities in ensuring the U.S. safe, economical, and assured commercial access to space.

Mr. Chairman, I know that you and the members of this subcommittee are familiar with the history of commercial space operations in this country, but in view of the significant number of new members of the Senate as a whole this year, please permit me to recount a brief history of this industry for the record.

BACKGROUND

From the beginning of the space age until relatively recently, space launching in this country was a strictly government activity, with NASA launching both scientific and commercial payloads and the military carrying out its own programs.

In the early 1980's, some visionaries dreamed of a commercial, private sector, space transportation industry and endeavored to make it a reality, leading to the recognition of the need for some coherent government oversight and regulatory focus, rather than the fragmented and debilitating need to deal

with various government concerns and requirements piecemeal. Among the results were the Commercial Space Launch Act (CSLA) of 1984 and the establishment of the Office of Commercial Space Transportation (OCST) within the Department of Transportation (DOT).

Why DOT? some have asked. Two very logical reasons. Moving non-government payloads, whether they are communications satellites, scientific instruments, or ultimately people, to, through, or from space is transportation. And this is a potentially hazardous activity, as tragically demonstrated by the recent failure of a Chinese space launch, killing six and injuring 23 people in a village several miles away. DOT is the regulatory agency which traditionally oversees the safety and other concerns of transportation modes in this country.

Through this Act and subsequent policy decisions, OCST was given the responsibility of ensuring the safety of commercial space transportation through a process of licensing commercial space launches and the operation of launch site facilities, determining insurance requirements for launch operators, facilitating access to government launch facilities, advising other government agencies on the vehicle and infrastructure needs of the commercial launch sector, and in various ways promoting the growth and international competitiveness of the U.S. commercial space transportation industry.

Little happened at first in this country, due to the apparent availability of low cost shuttle launches and related

shutdown of expendable launch vehicle (ELV) production lines. However, the European Space Agency nations, having acted on their determination not to be dependent upon the shuttle, had developed their Ariane expendable launch vehicle and were already operating an alternative to the shuttle out of Kourou, French Guiana.

The Challenger disaster in 1986 led to the recognition that the launching of commercial payloads was not the best use of the shuttle and the decision by McDonnell Douglas, General Dynamics and other traditional U.S. launch vehicle manufacturers to go back into production and become commercial launch service providers. The CSLA gave them the ability to use federal, primarily military, launch sites on a direct cost reimbursement basis.

Restarting ELV production lines took time, however, and the first commercial licensed launch did not take place until early 1989, more than three years after the Challenger tragedy. In the meantime, with no Western alternative, the ESA Ariane rocket built up an early lead in launch contracts which set the stage for its current position of leadership in commercial launching.

The challenge before us today is to restore the U.S. to its long-held position as the dominant supplier of launch services to the world.

CURRENT STATUS OF THE COMMERCIAL SPACE LAUNCH INDUSTRY

From that 1989 start, the U.S. commercial space launch industry has grown. In spite of a few failures in a young and complex undertaking, the industry appears on the verge of

attaining a degree of maturity. We have had 45 licensed commercial launches to date, including 15 each on Atlas and Delta vehicles. Launch operations have taken place from Cape Canaveral Air Station in Florida, White Sands Missile Range in New Mexico, Vandenberg Air Force Base in California, Wallops Flight Facility in Virginia, and the Kauai Test Facility in Hawaii.

Launch vehicles, such as the Atlas and Delta, have been significantly improved in performance, payload capacity, and on-orbit accuracy. New vehicles have been introduced or are under development. Two licensed commercial launches have occurred already this year and our commercial space launch manifest lists 17 more launches scheduled for the remainder of this calendar year, although some of these could slip.

A LOOK AHEAD

In spite of this growth and progress in the last five years, we believe the next twenty years will witness more significant changes in space commerce than those which have occurred since the dawn of the space age. We are excited about the long-range outlook for the commercial space transportation segment. We have a vision of space as a place to do business, and to do it in an increasingly commercial manner. On the present course, commercial space launches annually will potentially outnumber government launches within the next few years, and we believe this trend will continue.

Satellite communications is already a $6.5 billion (1994) international industry, of which $580 million and growing

represents the U.S. commercial space launch industry. The industry has depended primarily on geostationary (GEO) satellites 22,300 miles above the equator, and these continue to be a mainstay. But now mobile systems to carry individual voice and data communications through constellations of numerous low-earth-orbiting (LEO) satellites are poised to add a whole new dimension to the industry. The FCC recently approved licenses for the Iridium, Globalstar, and Odyssey LEO systems to go with the previously approved Orbcomm system. A significant number of these satellites are expected to be launched aboard U.S. vehicles.

By the turn of the century, global mobile communications satellite systems and services, including geostationary and non-geostationary, are projected to represent a $20 billion market, of which $11 billion would be satellites, launches and ground equipment.

Companies are already well into plans to exploit the many benefits to be gained from earth imaging from space. These include environmental monitoring, agricultural assessment, mineral exploration, and even traffic management.

New and increasingly commercial uses of Global Positioning System (GPS) satellites are being developed, and satellites committed to data transmission and paging are ready for launching.

And, of course, there is the essential contribution that satellites will continue to make to the development of the

National and Global Information Infrastructures (NII and GII) through the unique capability they add in connecting anyone with anyone else, anywhere on the globe.

We in the U.S. will have control over our own access to these many benefits only as long as we have reliable and cost effective launch capability and capacity.

We look forward to the day when work will actually be done in space on a commercial basis and when travel to, through and from space will be routine. This is, of course, looking well into the future, but decisions we make now will do much to determine whether the United States and its business community will lead the way.

Manufacturing and technology development, materials processing and crystal growth in space are ideas which need to be pursued for commercial applications. Some may not prove economically feasible, or may be further in the future than we now see, but if this nation and our private sector do not lead the way, others will.

NATIONAL SPACE TRANSPORTATION POLICY

On August 5, 1994, the Clinton Administration announced a new National Space Transportation Policy, and the White House, the Department of Transportation (DOT),and the Department of Commerce (DOC), are currently finishing up details on an implementation plan. This policy built on earlier work, (such as the Augustine Report and the Moorman Study), in which OCST participated, and also reflects input from our Commercial Space

Transportation Advisory Committee (COMSTAC), which provides industry expertise and perspective to the Secretary of Transportation.

I believe this policy and implementation plan provide the context within which we, in partnership with Congress, can take those steps needed to ensure the health and international competitiveness of the U.S. space transportation industry.

The plan lays out the roles and responsibilities of government departments and agencies, and other witnesses will, I'm sure, address some of these. We, at Transportation, have the primary responsibility for addressing the international competitiveness of the U.S. launch industry, and, with the Department of Commerce, developing public/private partnerships that will cooperate with NASA and the Department of Defense in their respective development of the next generation reusable launch vehicles and the evolved expendable launch vehicle (EELV) family.

Until the EELV family becomes operational, upgrades to the traditional expendable launch vehicle fleet are essential in order to stay competitive, an important interim step while awaiting the next generation vehicles. These measures are needed in order for launch providers to remain competitive in the short run, and to reduce the government's own launch costs during that period.

OCST also participated in the grant selection process for the 1993 and 1994 Air Force Dual-Use Infrastructure Grant

Programs.

RE-USABLE LAUNCH VEHICLES

We believe that the re-usable launch vehicle, such as the single-stage-to-orbit (SSTO) concept, is a promising technology to bring about a reduction in the cost to reach space. Such vehicles have the potential to provide highly reliable, safe and economical access to space.

There are, in fact, some promising entrepreneurial efforts underway along these lines. We are following closely the efforts of small, risk-taking private firms, which are actually building hardware with private capital to demonstrate their vision of how this can be done.

DOT is conducting pre-license consultations with larger, well-established commercial companies that are developing reusable launch vehicle technology in an effort to acquaint them with licensing requirements. We are advising them on approaches to safety issues and other considerations that may involve vehicle design, operation, and maintenance. In doing so we are establishing government/industry partnerships that will define the approaches to be used in shifting from high cost, infrequent, access to space, to lower cost, frequent, access, while protecting public health and safety.

TECHNOLOGICAL INNOVATION

Companies such as American Rocket, with its pioneering work on hybrid propellant, Orbital Sciences Corporation, developer of

the air-launched Pegasus and other innovations, and the Commercial Experiment Transporter (COMET) orbital re-entry vehicle, are only a few examples of the private sector pushing the technological envelope.

In another approach, we are working with a major U.S. aerospace firm pursuing an innovative commercial launch concept that involves collaboration among partners in this country, Russia, Ukraine, and Norway. This new "sea launch" venture would operate out of a U.S. home port and use a mobile floating launch platform to provide the optimum launch location for each specific kind of satellite.

REGULATORY ISSUES

These new technologies pose new and unique safety/regulatory issues. No longer is the government necessarily performing technical oversight over design and development of these new vehicles and technologies. DOT is the government agency responsible for assuring public health and safety as concerns the operation of these vehicles in commercial transportation and we must develop new expertise and regulatory tools to keep pace with the evolving changes occurring in this industry.

The development of industry standards is a desirable goal to increase efficiency and streamline both industry operations and the regulatory process. To stimulate and focus industry interest in such standards, OCST sponsored a workshop under the auspices of the American Institute of Aeronautics and Astronautics to address the benefits to the international space transportation

industry. I am pleased to report that this effort is on-going, with plans to have the first range safety standards available for industry review later this spring. We believe this will become a springboard to streamlining the regulation of the commercial space transportation industry by allowing the industry to define the standards by which it will provide for safe and reliable space systems.

During 1995, DOT is considering a number of activities to help achieve this vision of commercial space transportation in the next two decades. Allow me to mention a few:

o Launching and Launch Site Regulations: DOT hopes to update regulations concerning commercial launches and the operation of commercial launch sites. Using information gathered at a public meeting in October 1994, we intend to enhance both the definition and clarity of the 1988 regulations while retaining the flexibility necessary to encompass new space transportation systems developed since then.

o International Trade in Space Launches: DOT has helped to negotiate international agreements which promote market stability and competition as China and Russia enter the world space launch market and transition to market economies. OCST leads the interagency Working Groups on Information, which are responsible for monitoring Chinese and Russian compliance with the agreements. We are analyzing the need for international agreements with market economies (e.g., Europe and Japan) to provide for free and fair competition in space launches. OCST

supports the USTR by conducting LEO and GEO market assessments enabling the USTR to allow foreign launch suppliers to participate without disrupting the market.

o Vehicle Technology: DOT is working closely with DOD, NASA, and DOC to develop a common set of spacelift requirements to serve civil, commercial, and national security needs. DOT is also working closely with the other agencies to develop a coordinated technology plan to serve the future needs of the three space sectors.

o Space Launch Infrastructure: DOT is working closely with the U.S. private sector, existing DOD and NASA launch sites, emerging commercial spaceports, and interested state governments to develop an inventory of the infrastructure needs of the commercial space transportation industry.

We, at DOT, view our role as ensuring the safety of commercial space transportation. As you may recall, I requested the DOT Inspector General to review the procedures, processes, and organizational structure of the Licensing and Safety Division of OCST. Copies of the IG's report and our implementation plans for the recommendations made were provided to members of the subcommittee last year. We are well on our way to implementing those recommendations. We are in the process of updating the regulations, providing for electronic communications with our constituents, automation of the license application process, expanding our in-house expertise (three added personnel in 1994 brought in excess of 70 years aerospace experience to the

office), and enhancement of two-way communications between the licensing staff and license applicants.

Our goal is to work with industry. We welcome innovation and enterprise, commensurate with our responsibility to maintain safety. We also want to provide clarification to the site operator licensing process to facilitate development of this new industry and associated services.

INFRASTRUCTURE

Transportation infrastructure is, after safety, the principal operational concern of DOT, and space transportation infrastructure is probably undergoing, proportionately, the greatest transformation of any mode of transportation. While commercial launches to date have all taken place from federal facilities, work is proceeding on planning and development of four commercial launch sites in the U.S.

- Western Commercial Space Center located at Vandenberg Air Force Base in California has just received a $30 million investment from ITT and plans to support a variety of small launch vehicle operations.
- Spaceport Florida Authority is developing one or more commercial launch sites at Cape Canaveral and elsewhere.
- Alaska Spaceport plans development at Kodiak Island that would support commercial polar-orbital and suborbital launches.
- Southwest Regional Spaceport adjacent to White Sands

Missile Range in New Mexico is planning to support commercial sounding rocket activity and new reusable and expendable launch vehicle systems. It was the site for testing McDonnell Douglas's Delta Clipper, a single-stage-to-orbit concept vehicle.

DOT has the statutory responsibility to ensure protecting public health and safety through licensing operation of these facilities and is looking at innovative partnerships and other ways to be supportive of these groundbreaking undertakings.

We look to the implementation of other strategies, such as anchor tenancy, termination liability, innovative partnerships, and imaginative tax policies for commercial launch providers and spaceport developers to leverage private capital into space commerce.

FY '96 BUDGET REQUEST

Against this backdrop, Mr. Chairman, I note the President's FY 1996 request for the Office of Commercial Space Transportation is $6.541 million. It represents an increase of $534 thousand, or 9%, over the final FY 1995 appropriation. Three quarters of this amount is for personnel compensation, to fund for the full year positions authorized in the FY 1995 budget process. The FY 1996 request does not seek any additional personnel.

The FY 1995 staffing increases were enacted in response to the demands placed on OCST by the growth in the commercial space launch industry and its increasing complexity and

diversity. It is responding to industry's desire for more explicit guidance concerning licensing requirements.

Future resource needs are difficult to predict in a climate of diversifying technology and proprietary developments that can suddenly make yesterday's projection obsolete. A radical development in new vehicle technology, a dramatic breakthrough on cost per pound to orbit or other development could greatly alter the Office's requirements to be able to ensure safe and environmentally responsible commercial space transportation.

As part of the President's Reinventing Government Initiative, we, and all federal agencies, are reexamining our mission. We are seeking "customer" input, as we ask whether the mission could be accomplished without federal investment, what the benefits of competition are, and ways to cut red tape and empower employees.

This concludes my formal remarks. Once again, I thank you for inviting me to testify this morning. I would be happy to answer any of your questions.

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